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EXAMINER	
MANCHO, RONNIE M	
ART UNIT	PAPER NUMBER
3663	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/889,391	KAMEYAMA ET AL.
	Examiner	Art Unit
	Ronnie Mancho	3663

-- The MAILING DATE of this communication app ars on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 23 December 2002 .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1,2 and 4-41 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1,2,4-7,10-27 and 30-41 is/are rejected.

7)☒ Claim(s) 8,9,28 and 29 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claims 1-7, 10-16, 19, 20, 22-27, 30-35, 38-41 rejected under 35 U.S.C. 102(e) as being anticipated by Zheng et al (6184816).

Regarding claim 1, Zheng et al disclose a flying object navigation system comprising:

a base station (ground station, col. 6, lines 13+; fig. 4A; col. 16, lines 30+) capable of storing information (database, col. 7, lines 55+) provided as common information for navigation of at least one flying object (aircraft) existing as a navigation object, said base station (ground station, col. 6, lines 13+) transmitting (fig. 4A; col. 16, lines 30+) to said flying object (aircraft) necessary data from said stored information for determining a course of action to be taken by said flying object (aircraft) on the basis of observation data from meteorological observation means 61 (fig. 4A; col. 16, lines 30-55) for observing the meteorology of a space region in which said flying object (aircraft) is flying, said base station transmitting said necessary data by using communication means (58, fig. 4A; col. 16, lines 30+) connected to said flying object (aircraft),

wherein said base station (ground station) has a memory (database, col. 7, lines 24-34, lines 55-67) for storing data sets comprising:

all observation data obtained in the past through observation by said meteorological observation means 61 (fig. 4A; col. 16, lines 30-55);

records of courses of action (altitude, acceleration, navigation data, other flight data, etc; col. 16, lines 3-55; col. 15, lines 57-67) taken by said flying object on the basis of the observation data; and

records of events (turbulence, winds, temperature, etc; col. 16, lines 3-55) encountered by said flying object as a result of the records of the courses of action (altitude, acceleration, navigation data, other flight data, etc; col. 16, lines 3-55; col. 15, lines 57-67).

Regarding claim 2, Zheng et al disclose the flying object navigation system according to claim 1, further comprising:

said flying object (aircraft, fig. 4A) having said meteorological observation means 10 (col. 16, lines 30+; col. 9, lines 63+), further includes;

transmitting means 58 (fig. 4A) for transmitting, to said base station, observation data obtained through observation by said meteorological observation means (col. 16, lines 3-55; col. 15, lines 57-67); and

receiving means 58 (fig. 4A) for receiving necessary data for determining a course of action to be taken, the necessary data being transmitted from said base station (ground station, fig. 4A; col. 16, lines 30+; col. 6, lines 13+) by using said communication means 58.

Regarding claim 4, Zheng et al disclose the flying object navigation system according to claim 1, wherein said base station (ground station) includes a data base (database, col. 7, lines 55+) which is constructed on the basis of the contents of said data sets stored in said memory and wherein observation data obtained through observation by said meteorological observation means 10, a course of action taken by said flying object after meteorological observation, and an event encountered by said flying object as a result of taking the course of action are related to each other (cols. 6-9, and 16).

Regarding claim 5, Zheng et al disclose the flying object navigation system according to claim 4, wherein said base station (ground station) comprises:

a receiving section for receiving, through said communication means 58 (col. 16, lines 30+), observation data obtained through observation by said meteorological observation means 10;

a prediction section for predicting (forecasting, col. 6, lines 57+) the relationship between a course of action taken by said flying object and an event (CAT, col. 6, lines 13+) encountered by said flying object (aircraft) as a result of taking the course of action by making a search to ascertain which case in said data base (database, col. 7, lines 55+) the received observation data corresponds to (convective super cells, TNT, MWT, etc); and

a transmitting section (fig. 4A, col. 16, lines 30+) for transmitting a prediction result obtained by said prediction section (forecasting, col. 6, lines 57+) to said flying object (aircraft) through said communication means 58 (col. 16, lines 30+).

Regarding claim 6, Zheng et al disclose the flying object navigation system according to claim 5, wherein said base station (ground station) has a function of successively storing (database, col. 7, lines 55+), when data sets are newly formed, the new data sets on said memory, and a function of reconstructing (information updates, col. 8, line 7) said data base from the older data sets and the new data sets successively stored.

Regarding claim 7, Zheng et al disclose a flying object navigation system comprising:

a base station (ground station, col. 6, lines 13+; fig. 4A; col. 16, lines 30+) capable of storing information (database, col. 7, lines 55+) provided as common information for navigation of at least one flying object (aircraft) existing as a navigation object, said base station (ground station, col. 6, lines 13+) transmitting (fig. 4A; col. 16, lines 30+) to said flying object (aircraft) necessary data from said stored information for determining a course of action to be taken by said flying object (aircraft) on the basis of observation data from meteorological observation means 61 (fig. 4A; col. 16, lines 30-55) for observing the meteorology of a space region in which said flying object (aircraft) is flying, said base station transmitting said necessary data by using communication means (58, fig. 4A; col. 16, lines 30+) connected to said flying object (aircraft),

wherein said base station (ground station) transmits a signal for operating said flying object to control the operation of said flying object (col. 16, lines 30+).

Regarding claim 10, Zheng et al disclose the flying object navigation system according to claim 1, wherein a plurality of base stations (ground stations 60, 61, fig. 4A; col. 16, lines 41+; also see col. 7, line 5) are provided on one star (i.e. earth. See specification page 7).

Regarding claim 11, Zheng et al disclose the flying object navigation system according to claim 10, wherein the plurality of said base stations (ground stations 60, 61, fig. 4A; col. 16, lines 41+; also see col. 7, line 5) provided on the one star (earth) are connected to each other through base station interconnection communication means (col. 16, lines 41+; fig. 4A), and that, every time a data base is reconstructed, data sets in the data base are transmitted between said base stations (ground stations 60, 61, fig. 4A; col. 16, lines 41+).

Regarding claim 12, Zheng et al disclose the flying object navigation system according to claim 1, wherein each of said base station and said flying object has an antenna, and each of said communication means and said base station interconnection communication means performs wireless communication (col. 8, lines 1+).

Regarding claim 13, Zheng et al disclose the flying object navigation system according to claim 1, wherein said flying object is an airplane.

Regarding claim 14, Zheng et al disclose the flying object navigation system according to claim 1, wherein said meteorological observation means 10 comprises an air turbulence observation apparatus (col. 9, lines 62+).

Regarding claim 15, Zheng et al disclose the flying object navigation system according to claim 1, wherein an event encountered by said flying object includes changes in wind velocity with time in vertical and/or horizontal directions acting on said flying object (CAT).

Regarding claim 16, Zheng et al disclose the flying object navigation system according to claim 12, wherein said communication means for performing wireless communication uses light waves (Lidar, col. 7, lines 2+).

Regarding claim 19, Zheng et al disclose the flying object navigation system according to claim 14, wherein said air turbulence detector comprises a laser radar air turbulence detector.

Regarding claim 20, Zheng et al disclose the flying object navigation system according to claim 19, wherein said laser radar air turbulence detector has functions of transmitting laser light, receiving, as a received signal, scattered light caused by scattering of the laser light in the air, and observing the wind velocity from the Doppler effect in the received signal (col. 7, lines 2+; col. 11, lines 18+).

Regarding claim 22, Zheng et al disclose a flying object navigation system comprising:

at least one flying object (aircraft, fig. 4A) existing as a navigation object;

meteorological observation means 10 (col. 16, lines 30+; col. 9, lines 62+) for observing the meteorology of a space region in which said flying object is flying; and

a flying object interconnection means (fig. 4A) for interconnecting a plurality of flying objects (54, 62, 64), characterized in that information provided as common information for navigation of said flying objects is stored (56, 66; col. 16, lines 30+) in each of said flying objects (54, 62, 64),, and a course of action (col. 7, lines 60+) to be taken by each of said flying objects is determined on the basis of said information and observation data from said meteorological observation means.

Regarding claim 23, Zheng et al disclose the flying object navigation system according to claim 22, characterized in that said meteorological observation means 10 (col. 16, lines 30+) is mounted on said flying object.

Regarding claim 24, Zheng et al disclose the flying object navigation system according to claim 23, characterized in that said flying object has a memory (55, 66; fig. 4A) for storing data sets constituted of all observation data obtained in the past through observation by said meteorological observation means 10 mounted on said at least one flying object, records of courses of action taken by said flying object on the basis of the observation data, and records of events encountered by said flying object as a result of the records of the courses of action (cols. 6-10, col. 16).

Regarding claim 25, Zheng et al disclose the flying object navigation system according to claim 24, characterized in that said flying object has a data base (55, 66; fig. 4A) which is constructed on the basis of the contents of said data sets stored on said memory, and in which observation data obtained through observation by said meteorological observation means 10, a course of action taken by said flying object after meteorological observation, and an event encountered by said flying object as a result of taking the course of action are related to each other (cols. 6-10, col. 16).

Regarding claim 26, Zheng et al disclose the flying object navigation system according to claim 25, characterized in that said flying object has:

a prediction section (forecast data, col. 8, lines 43-64) for predicting the relationship between a course of action taken by said flying object (aircraft) and an event (turbulence)

encountered by said flying object (aircraft) as a result of taking the course of action by making a search to ascertain which case in said data base the received observation data obtained through observation by said meteorological observation means corresponds to (col. 9, lines 1+); and

a transmitting section 58 (col. 16, lines 30+) for transmitting a prediction result (forecast data, col. 8, lines 43-64) obtained by said prediction section to another flying object (other aircraft, col. 8, lines 43-49; also see 62, 64, fig. 4A) through said flying object (col. 8, lines 46-interconnection communication means (fig. 4A).

Regarding claim 27, Zheng et al disclose the flying object navigation system according to claim 26, characterized in that said flying object has a function of successively storing on said memory data sets, each of said memory data sets comprising:

observation data obtained through observation by said meteorological observation means mounted on said flying object or another flying object;

a record of a course of action taken by said flying object or the other flying object on the basis of the observation data;

an event actually encountered by said flying object or the other flying object as a result of the record of the course of action; and

a function of reconstructing said data base from updated data sets obtained by combining the older data sets and the new data sets successively stored (cols. 6-10, col. 16).

Regarding claim 30, Zheng et al disclose the flying object navigation system according to claim 22, characterized in that said flying object has an antenna, and said flying object interconnection communication means performs wireless communication (fig. 4A).

Regarding claim 31, Zheng et al disclose the flying object navigation system according to claim 22, characterized in that said flying object is an airplane.

Regarding claim 32, Zheng et al disclose the flying object navigation system according to claim 22, characterized in that said meteorological observation means 10 (fig. 2A; col. 9, lines 62+) comprises an air turbulence (CAT, col. 6, lines 10+) observation apparatus.

Regarding claim 33, Zheng et al disclose the flying object navigation system according to claim 32, characterized in that an event (turbulence, col. 6, lines 10+) encountered by said flying object includes changes in wind velocity with time in vertical and horizontal directions acting on said flying object (cols. 6-8).

Regarding claim 34, Zheng et al disclose the flying object navigation system according to claim 32, characterized in that said flying object interconnection communication means for performing wireless communication uses light waves (col. 7, lines 2+).

Regarding claim 35, Zheng et al disclose the flying object navigation system according to claim 32, characterized in that said air turbulence detector comprises a laser radar air turbulence detector (col. 7, lines 2+).

Regarding claim 38, Zheng et al (col. 16, lines 3-55) disclose a flying object navigation system comprising:

an observation apparatus 55 mounted on a flying object (fig. 4A) for collecting and transmitting observational data; and

a database terminal (66, 60; fig. 4A; col. 6, lines 13-55; fig. 4A; col. 16, lines 30+) for receiving said observational data , determining and transmitting prediction results to said flying object for determining a flight path for said flying object based on the prediction results,

wherein observational data is received by said data base terminal from a plurality of flying objects, and

wherein said database terminal determines said prediction results based on received observation data and prior observation data from said plurality of flying objects, said observational data received from said plurality of flying objects being categorized in said database terminal according to occurred events in similar trajectories and spatial positions (col. 15, lines 58 to col. 16).

Regarding claim 39, Zheng et al disclose the flying object navigation system according to claim 38, wherein said observation data includes meteorological data (col. 6, lines 13-55).

Regarding claim 40, Zheng et al (col. 16, lines 3-55) disclose a flying object navigation system comprising:

an observation apparatus 55 mounted on at least one flying object (fig. 4A) for collecting and transmitting observational data; and

a database terminal (66; fig. 4A; col. 6, lines 13-55; fig. 4A; col. 16, lines 30+) mounted on a second flying object (col. 16, lines 44-55) for receiving said observational data , determining and transmitting prediction results for determining a flight path for said second flying object based on the prediction results,

wherein said database terminal determines said prediction results based on received observation data and prior observation data from said plurality of flying objects, said observational data received from said plurality of flying objects being categorized in said database terminal according to occurred events in similar trajectories and spatial positions (col. 15, lines 58 to col. 16).

Regarding claim 41, Zheng et al disclose the flying object navigation system according to claim 38, wherein said observation data includes meteorological data (col. 6, lines 13-55).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 17, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zheng et al (6184816) in view of Small et al (5093563).

Regarding claim 17, Zheng et al disclose the flying object navigation system according to claim 12, wherein a plurality of said base stations (ground stations, col. 7, lines 5+) are provided on one star (i.e. earth, see specification, page 7, last paragraph), but did not mention an interconnection cable. However, Small et al (5093563) teaches of base stations connected by a base station interconnection cable 64 (fig. 3; col. 4, lines 60+; col. 12, lines 54+). Therefore, it would have been obvious to one of ordinary skill in the art of optically detecting turbulence to

modify the Zheng et al device as taught by small et al for the purpose of recording more information than conventionally known, Small et al (col. 4, lines 50+)

Regarding claim 18, Small et al disclose the flying object navigation system according to claim 17, wherein said base station interconnection cable is formed of an optical fiber cable.

5. Claims 21, 36, 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zheng et al (6184816) in view of De Groot et al (6327039).

Regarding claim 21, Zheng et al (col. 7, lines 1+) disclose the flying object navigation system according to claim 19, characterized with a laser radar air turbulence detector. On the other hand, Zheng did not disclose how the laser radar works. However, De Groot et al teaches of a laser radar air turbulence detector characterized in that said laser radar air turbulence detector has functions of transmitting laser light, receiving, as a received signal, scattered light caused by scattering of the laser light in the air (col. 3, lines 55 to col. 4, lines 1+), and observing the density of air (abstract; col. 6, lines 56 through col. 7, lines 1-14) from the intensity of the received signal. Therefore, it would have been obvious to one of ordinary skill in the art of meteorology to modify the Zheng et al device as taught by De Groot et al for the purpose of compensating for errors related to refractive index measurement brought about by turbulence, De Groot e al, abstract.

Regarding claim 36, Zheng et al disclose the flying object navigation system according to claim 35, characterized with a laser radar air turbulence detector. On the other hand, Zheng did not disclose how the laser radar works. However, De Groot et al teaches of a laser radar air turbulence detector characterized in that said laser radar air turbulence detector has functions of

transmitting laser light, receiving, as a received signal, scattered light caused by scattering of the laser light in the air (col. 3, lines 55 to col. 4, lines 1+), and observing the wind velocity from the Doppler effect in the received signal (col. 15, lines 45+; col. 42, lines 33+). Therefore, it would have been obvious to one of ordinary skill in the art of meteorology to modify the Zheng et al device as taught by De Groot et al for the purpose of compensating for errors related to refractive index measurement brought about by turbulence, De Groot e al, abstract.

Regarding claim 37, Zheng et al (col. 7, lines 1+) disclose the flying object navigation system according to claim 35, characterized with a laser radar air turbulence detector. On the other hand, Zheng did not disclose how the laser radar works. However, De Groot et al teaches of a laser radar air turbulence detector characterized in that said laser radar air turbulence detector has functions of transmitting laser light, receiving, as a received signal, scattered light caused by scattering of the laser light in the air (col. 3, lines 55 to col. 4, lines 1+), and observing the density of air (abstract; col. 6, lines 56 through col. 7, lines 1-14) from the intensity of the received signal. Therefore, it would have been obvious to one of ordinary skill in the art of meteorology to modify the Zheng et al device as taught by De Groot et al for the purpose of compensating for errors related to refractive index measurement brought about by turbulence, De Groot e al, abstract.

Allowable Subject Matter

6. Claims 8, 9, 28, and 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter:

In claims 8, 9, 28, 29, the prior art does not disclose base stations provided on different stars.

Response to Arguments

8. Applicant's arguments filed 12-23-02 have been fully considered but they are not all persuasive. Particularly, the applicant has included new claims and has amended the old claims including new limitations.

The applicant is arguing that the prior art does not disclose the limitations combined in the claims. In response, the examiner disagrees. The sections in the prior art disclosing such limitations in the claims have been indicated. Therefore, the rejections are considered proper and stand.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Communication

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ronnie Mancho whose telephone number is 703-305-6318. The examiner can normally be reached on Mon-Thurs; 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Black can be reached on 703-303-9707. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7687 for regular communications and 703-305-7687 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

Ronnie Mancho
Examiner
Art Unit 3663

March 24, 2003

THOMAS G. BLACK
SUPERVISORY PATENT EXAMINER
GROUP 3600